

ARGUMENTS/REMARKS

Applicants would like to thank the examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe and claim the subject matter which applicants regard as the invention.

Claims 1–40 remain in this application. Claims 25-38 have been indicated as being in a condition for allowance.

Applicants note that the Examiner has failed to address the limitations of claims 39 and 40 in her remarks, and has not cited any references for teaching those limitations.

Claims 1–2 and 13–14 were previously rejected under 35 U.S.C. §103(a) as being unpatentable over Malkemes *et al.* (WO 97/40584) in view of Igarashi *et al.* (U.S. 5,926,749) and further in view of Nguyen (U.S. 6,253,092). For the following reasons, the rejections are respectfully traversed.

Claim 1 recites a control method including the step of “controlling an adjustable digital-to-analog converter for generating an analog baseband signal to be input to a modulator”. Claim 13 recites a radio communication apparatus having an “adjustable digital-to-analog converter for generating an analog transmission signal”. The Examiner cites Malkemes as teaching such a feature. However, it is clear from a review of the reference that there is no such teaching.

First, Figure 2 of the reference clearly shows two D/A converters 130, 131 with only a *single* input and a *single* output. There is no control input shown in this, or any other figure. However, control lines to *other* devices (170, 171) are clearly shown in the Figure. Furthermore, the Examiner cites page 4, lines 7-13 for teaching control of the converters, even though the converters discussed in that paragraph are clearly identified as having *fixed* parameters, and thus clearly are not controllable (see line 12). Finally, although the Examiner cites Malkemes page 11, lines 9-10 as supporting a teaching of controlling a converter, that section teaches nothing more than that analog signal I is input into converter 130, and analog signal Q is input into converter 131, as is also supported by Fig. 2. Thus, the Examiner is clearly confusing a signal input with a control. There is no teaching in the reference of any *control* of the converters 130 and

131, and thus Malkemes does not teach that for which it is cited, and therefore claims 1 and 13 are patentable over the reference.

The Examiner later cites Nguyen as teaching an adjustable D/A converter. However, The DAC 96 of the reference does not generate an analog baseband signal as specified by claims 1 and 13. Instead, the DAC 96 of the reference receives a signal from a processor 94 and provides an input to the power control circuit 92, and thus the DAC 96 is part of the control loop of the Nguyen device, and not part of the signal path as provided in the claims and in Malkemes. Thus, it would not be possible to use the scheme of Nguyen for the apparatus of Malkemes, and the DAC is not appropriate for the purpose of Malkemes.

Furthermore, the DAC of Nguyen is clearly not adjustable. The sections cited by the Examiner discuss the control function of the Nguyen device, but do not discuss actually controlling the DAC, and Figure 3 of the reference makes clear that there is no control input to the DAC 96. Instead, the DAC 96 merely converts digital control signals from the processor 94 into analog control signals. Thus, the DAC inputs control signals for converting from digital to analog, but those signals do not control the DAC; rather, they are for controlling *other* components (i.e., the variable gain PAM 78, 80). But the DAC is not controlled by this signal.

Accordingly, the Nguyen reference does not teach that for which it is cited, and thus the reference fails to overcome the shortcomings of the Malkemes reference.

Furthermore, claim 1 recites the step of “inputting said modulated signal into an amplifier unit including a plurality of variable power amplifiers”. Claim 13 recites “an amplifier unit comprising a plurality of variable power amplifiers for variably amplifying the transmission signal modulated by the modulator”. The Examiner cites Malkemes as teaching this step, although Malkemes clearly shows only a *single* variable amplifier 160 in Fig. 2. The Examiner’s citation of page 6, lines 28-29 does not overcome this deficiency, as that section merely states that the modulated carrier signal is input “to a transmission power amplifier.” Thus, yet again, the reference does not teach that for which it is cited, and thus claims 1 and 13 are patentable over the reference.

In addition, claim 1 recites that the plurality of variable power amplifiers are individually controlled for “variably amplifying the modulated signal for transmission

without further modulation.” Claim 13 recites that the plurality of variable power amplifiers are for “variably amplifying the transmission signal modulated by the modulator for transmission without further modulation” and that there is a “variable power amplification control unit for individually controlling the variable power amplifiers of the amplifier”. The Examiner cites Malkemes for teaching transmitting a modulated signal without further modulation, but as discussed above, the reference clearly does not teach a *plurality* of amplifiers that are individually controlled. Instead, the Examiner cites Igarashi as teaching power amplifiers that are individually controlled.

However, Igarashi does not teach a plurality of power amplifiers that are individually controlled *and* that amplify the modulated transmission signal for transmission without further modulation, as required by the claim language. Instead, it is clear that the amplifiers 2, 3 in Figs 1 and 2 of Igarashi are placed *prior* to the modulator 5, and thus the amplifiers clearly do not modulated the modulated signal for transmission *without further modulation* as recited by the claims. In fact, Igarashi shows only a *single* variable amplifier 4 placed after the modulator 5 for transmitting the signal without further modulation, and thus Igarashi clearly *teaches away* from the concept of the plurality of variable power amplifiers of the claims, both because the cited plurality of variable amplifiers 2, 3 would not be *power* amplifiers, and because Igarashi teaches using only a *single* amplifier for amplifying a modulated signal for transmission *without* further modulation.

Consequently, even the combination of references does not teach a plurality of variable power amplifiers for amplifying a modulated signal for transmission without further modulation, and thus claims 1 and 13 are patentable over the references for this reason as well.

Claim 2, which depends on claim 1, and claim 14, which depends on claim 13, are thus patentable over the references for at least the same reasons as the parent claims, as are claims 39 and 40.

Furthermore, claim 2 recites that a “control ratio of the variable power amplifiers is modified and at least one of series and parallel control in a control range is made in the controlling a plurality of variable power amplifiers step” and claim 14 recites that the “variable power amplification control unit modifies a control ratio of the variable power

amplifiers and makes at least one of series and parallel control in the control range”. The Examiner cites Malkemes as teaching such a control ratio of the variable power amplifiers. However, this is not possible, because Malkemes, as discussed above, fails to teach any plurality of variable power amplifiers, and thus such a ratio cannot exist. Thus, claims 2 and 14 are patentable over Malkemes for this reason as well. Igarashi does not overcome the Malkemes shortcomings (because again there is but a single variable power amplifier for amplifying the modulated signal without further modulation, and thus there cannot be any ratio), and thus claims 2 and 14 are patentable over the combination of references as well.

Claim 39 recites that said plurality of amplifiers comprise an "amplifier unit" and that "said plurality of variable power amplifiers are individually controlled such that a function of an output of said amplifier unit to a control voltage is substantially linear over a wider range of said control voltage than is a function of each one of said plurality of variable power amplifiers to said control voltage." Claim 40 recites similar language for dependence upon claim 13.

The Examiner has failed to address these limitations, and none of the prior art references teach an amplifier unit comprised of a plurality of variable power amplifiers with the cited characteristics. Accordingly, claims 39 and 40 are patentable over the references.

Claims 3, 5-6, 15, and 17-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Malkemes in view of Igarashi *et al.* (U.S. 5,926,749) and Nguyen, and further in view of Fujita (EP 0,883,250 A2). Claims 4 and 16 are rejected as above, in further view of Davidovici *et al.* (U.S. 5,963,583). Claims 7 and 19 (and, apparently, 8-9 and 20-21) are rejected under 35 U.S.C. §103(a) as being unpatentable over Malkemes in view of Fujita, and further in view of Shibahara (JP 357166711). Claims 10 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Malkemes in view of Fujita and further in view of Shibahara and Davidovici. For the following reasons, the rejections are respectfully traversed.

Claims 3-6 depend, directly or indirectly, upon claim 1, while claims 15-18 depend, directly or indirectly, upon claim 13. Accordingly, these claims are patentable

over the references because Fujita fails to overcome the shortcomings of Malkemes and Igarashi discussed above for the parent claims.

In addition, claims 3 and 5 depend on claim 2, and claims 15 and 17 depend on claim 14, and because Fujita fails to overcome the shortcomings discussed for claims 2 and 14, claims 3, 5, 15, and 17 are patentable over the references for the same reasons discussed for claim 2.

Furthermore, claim 3 recites the steps of “detecting a state of at least one of a local station and a distant station” and “modifying the control ratio according to the detected state”, whereas claim 15 recites the apparatus of claim 14 further comprising “a state detection unit for detecting a state of at least one of a local station and a distant station” wherein “the variable power amplification control unit modifies the control ratio according to the detected state”.

The Examiner cites Fujita as teaching the “detecting a state” function and as teaching the “modifying” of the control ratio according to the state, admitting that the other references do not teach such a feature. However, there is no teaching of modifying any control *ratio*. Nowhere does the reference discuss controlling a ratio of any two variable power amplifiers. In fact, the reference specifically teaches, in the cited section, that “only the amplifier 2 is turned ON while the amplifiers 3 and 4 are turned OFF so that the output of the amplifier 2 is directly used as output power of the transmission power amplifying section of the mobile station.” (See col. 13, lines 43-46.) There can be no control of any “ratio” between amplifiers 2, 3, and 4 if only one amplifier is being utilized. Furthermore, the reference is silent as to controlling any ratio of amplifier 1 and 2. Accordingly, no control of any control ratio is taught, and thus claims 3 and 15 are patentable over the references.

In addition, as seen from Fig. 4, only amplifier 1 appears to have a variable gain (note that only signal and power inputs are shown for amplifier 2), and thus does not meet the requirement of the amplifiers being variable power amplifiers. Note further that amplifiers 3 and 4 have only power inputs (that can be turned on and off by bias circuits 24 and 25, respectively, according to the cited scenario—see col. 13, lines 36-37: “the bias circuits 24 and 25 interrupts the supply of voltage to the amplifiers 3 and 4, so that the amplifiers 3 and 4 are deactivated”). Thus, there is no plurality of variable power

amplifiers as required by the claims, and thus for this reason as well, claims 3 and 15 are patentable over the references.

Claim 4 depends on claim 3, which in turn depends on claim 2, which in turn depends on claim 1. Thus, claim 4 is patentable for at least any of the reasons discussed for claims 1, 2, and 3. Similarly, claim 16 depends on claim 15, which depends on claim 14, which depends on claim 13. Thus, claim 16 is patentable for at least any of the reasons of claims 13, 14, and 15 discussed above.

Claim 5, which depends on claim 3; and claim 17, which depends on claim 15, are thus patentable over the references for at least the same reasons as their parent claims.

Claims 6 and 18 recite that a “control sensitivity of each of the plurality of variable power amplifiers differs from each other”. The Examiner basically admits that none of the references teach such a feature when she refers to Fujita Fig. 1 and states that “it is inherent of variable power amplifiers to differ regarding control sensitivity due to physical conditions such as position, interference, etc.”, referring to U.S. Pat. No. 6,411,825). Even if true (and applicant contests that any such inherency exists), as was previously pointed out, Fujita teaches only a single variable power amplifier, and thus cannot show “control sensitivity” as recited in the claims (only a controllable amplifier would show control sensitivity). Thus, claims 6 and 18 are patentable over the references for this reason as well.

Claim 7 recites a control method including the steps of “controlling a plurality of voltage controllers” and “controlling, using said plurality of voltage controllers, a power amplifier for amplifying a transmission signal via separate bias systems”. Claim 19 recites a radio communications apparatus comprising “a power amplifier having separate bias systems for amplifying a transmission signal;” a “plurality of voltage controllers for controlling the power amplifier via the separate bias systems;” and a “control unit for individually controlling the plurality of voltage controllers”. These features are not found in the cited references.

The Examiner cites the Fujita reference for teaching these features. However, as discussed above regarding the rejection of claims 3 and 15, that neither amplifier 3, nor amplifier 4, have separate bias systems, and instead each amplifier has only a *single* power input, such that each one can be turned on and off by a *single* bias circuit (24 and

25, respectively—see col. 13, lines 36-37: “the bias circuits 24 and 25 interrupts the supply of voltage to the amplifiers 3 and 4, so that the amplifiers 3 and 4 are deactivated”). In contrast, amplifier 13 in Fig. 11 of the applications shows an example of an amplifier according to the claim language, with the amplifier 13 having two bias control inputs each controlled by a *different* voltage controller (19, 20 respectively). Thus, claims 7 and 19 are patentable over the references.

Claim 10 depends indirectly on claim 7, and thus is patentable for similar reasons. Claim 8, which depends on claim 7, is patentable over the references for at least the same reason discussed for claim 7. Furthermore, claim 8 recites that a “control ratio of the voltage controllers is modified and at least one of series and parallel control in a control range is made in the voltage controller controlling step”. Claim 20 recites similar limitations. The Examiner cites Malkemes as teaching such a control ratio, but as discussed above for claims 2 and 14, the reference fails to provide any teaching of a control ratio. Accordingly, claims 8 and 20 is patentable over the references for this reason as well. In addition, Malkemes does not teach any plurality of *voltage controllers*, and thus Malkemes cannot teach any such ratio (note that the ratio of claims 2 and 14, for which Malkemes is originally cited, are regarding *amplifier* control, not voltage controller control, as specified by claims 8 and 20—see items 19 and 20 of Fig. 1 of the application—and it is clear that the cited ratios of claims 2 and 14-- are different from the ratios of claims 8 and 20). Accordingly, the claims are patentable over the references for this reason as well.

Although the Examiner may attempt to cite the bias circuits 24 and 25 of Fujita as teaching voltage controllers, there is no teaching in Fujita of controlling any control *ratios* of these bias circuits 24, 25, and thus such an argument would fail. Furthermore, the reference teaches that the voltage bias circuits are either on or off (apparently typically at the same time), and thus a control “ratio” would make no sense. Accordingly, Fujita would not overcome the Malkemes shortcomings.

Claim 9 depends on claim 8, which depends on claim 7. Thus, claim 9 is patentable over the references at least for any of the reasons that claim 7 is patentable. Claim 21 depends on claim 20, which depends on claim 19. Thus, claim 21 is patentable over the references for at least the same reasons as its parent claims.

Claim 10, which depends on claim 9, which depends on claim 8, which depends on claim 7, is thus patentable for at least any of the reasons discussed for the parent claims. Similarly, claim 22, which depends on claim 21, which depends on claim 20, which depends on claim 19, is patentable for at least any of the reasons discussed for the parent claims.

Finally, as previously argued, the Examiner has failed to provide the proper motivations for combining the references, and thus has not made a prima facie case for obviousness. Accordingly, the rejections for obviousness are not proper, and should be withdrawn. In consideration of the foregoing analysis, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 33677.

Respectfully submitted,
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